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ENTOMOLOGICAL NEWS

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A New Species of Aphodius with Notes on Others (Coleoptera: Scarabaeidae)

By MARK ROBINSON, Springfield, Pennsylvania

Unless otherwise noted, the specimens used as the basis of this paper are in the collection of the author.

Aphodius (Platyderides) yukonensis new species

This species is allied to *phaeopterus* Leconte but is larger in size. Also in the older species the middle and posterior femora have many hairs on the posterior side. The greatest difference between the two species is in the secondary sexual characters of the anterior and middle tibial spurs. The spur on the anterior tibia of *phaeopterus* is not as long nor as stout and is less strongly curved than the corresponding, spur on *yukonensis*. In male specimens of the older species, the short spur of the middle tibia is one-third the length of the long spur and is abruptly turned inwards at the apex.

Elongate, parallel, moderately convex; disk of the head and thorax blackish, the rest of the body is dark reddish, setae yellowish; shining.

Clypeus shallowly emarginate, the angles on each side subacute. Genae moderately prominent, well rounded, fimbriate. The surface of the head is moderately coarsely and rather evenly punctured. The punctures are separated from one to three times their diameter. Frons with three ill-defined tubercles placed transversely.

Thoracic side margins slightly explanate, fimbriate. The anterior angles are well rounded while the posterior ones are very broadly rounded. The side margins are parallel and the posterior margin has the marginal line entire. The disk is mod-

erately convex. The punctures are of two sizes, the finer series is evenly distributed over the disk; the coarser punctures are denser posteriorly and especially so laterally. These punctures are separated by about one-half their own diameter near the lateral margin.

Humeri of elytra obtuse. Sides weakly arcuate; fimbriate in anterior two-thirds. Striae well marked, deeply, crenately punctured. Intervals slightly convex, biseriately, finely punctured. The striae and intervals towards the side margins are a little more coarsely punctured.

Prosternum with a well rounded, densely hairy lobe. Mesosternum not carinate. Metasternum finely punctured, medially. Sides of metasternum coarsely, setigerously punctured. Abdominal segments alutaceous, finely punctured. Each of these abdominal punctures bears a decumbent hair.

The anterior tibia is tridentate, not crenate above the third tooth; these teeth are broad and blunt. Middle and posterior femur finely and sparsely punctured with a few hair-bearing, coarser punctures scattered between the finer ones. The apices of the middle and posterior tibiae are fimbriate with unequal spinules. The first joint of the posterior tarsi is subequal in length to the next three joints.

Male. Spur of anterior tibia longer than the first three tarsal joints. This spur is parallel in its basal part and widens as it curves inwards at right angles to an acute apex. The short spur of the middle tibia is a little over half as long as the long spur, curved inwards in distal one-third to an acute apex. Metasternum slightly concave in the center.

Length, 7.2 mm.; breadth, 3.0 mm.

Type. ♂; Whitehorse, Yukon, Canada, May 20, 1916 (J. A. Kusche). *Paratype*. ♂; with the same data as the type.

Aphodius aleutus Eschscholtz

1822. *Aphodius aleutus* Eschscholtz, Entomographien, Berlin, p. 27.
1907. *Aphodius plutonicus* Fall, Trans. Amer. Ent. Soc., XXXIII, p. 245.

Fall described *plutonicus* from a male example collected at south Fork Eagle Creek, White Mountains, New Mexico. This specimen has been examined but not dissected. Other examples agreeing with the type from New Mexico and Arizona have been dissected and the form of the male genitalia found to agree with specimens of *aleutus* from Alaska, Alberta and Quebec in Canada, and from Wyoming, Colorado, Pennsylvania, Maryland and North Carolina in the United States. Externally all of the above examples agree expect for a variation in color; the more northern specimens tend to be lighter in color with dark maculations on the elytra while specimens from Arizona, New Mexico, Colorado, Maryland and North Carolina are darker in color with the elytral maculations very vague.

Aphodius aleutus is described as having the spinules on the middle and posterior tibial apices even in length while in the type of *plutonicus* they are slightly uneven in length. This is a good example of a case in which the length of the tibial spinules is a misleading character as over the large series of specimens examined all variations of this character were noticed without any correlation as to locality or sex.

In view of the above information I feel it is best to drop the name *plutonicus* in favor of the older species *aleutus*.

Aphodius (Platyderides) leptotarsis Brown

1928. *Aphodius* (*Platyderides*) *leptotarsis* Brown, Can. Ent., LX, p. 15.
1938. *Aphodius* (*Platyderides*) *leptotarsis* Robinson not Brown, Ent. News, XLIX, p. 103.

A second specimen of this rare species was taken by the writer at Broomall, Pennsylvania on October 15, 1947 (flying in the afternoon). This specimen proves to be a female and as this sex has not previously been described the following remarks will help to separate it from the male.

Anterior tibial spur slender, gently down-curved to the acute apex. Short spur of the middle tibia straight, about half as long as the long spur, acute at the apex. The patches of hairs on the posterior margin of the middle and posterior tibia obsolete.

Length, 4.8 mm.; breadth, 2.2 mm.

The above specimen is designated the allotype of the species.

Aphodius (Platyderides) haldemani Horn

1870. *Aphodius politus* Horn, Tran. Amer. Ent. Soc., III, p. 128.
1887. *Aphodius haldemani* Horn, Tran. Amer. Ent. Soc., XIV, p. 33.
1928. *Aphodius* (*Platyderides*) *haldemani* Brown not Horn, Can. Ent., LX, p. 39.
1940. *Aphodius* (*Platyderides*) *magnificens* Robinson, Tran. Amer. Ent. Soc., LXVI, p. 144.

The type of Horn's species is represented in the collection of the Academy of Natural Sciences by a unique. At the time I described *magnificens* I stated, "I believe this species to be distinct from *haldemani* Horn because of its different color, coarse punctures on the pronotum denser, male anterior tibial spur is truncate and not oblique and the short spur of the middle tibia is prolonged inward and not rounded." Since this description was written I have examined two more males and a female of *haldemani* collected at College Station, Texas in the nest of *Geomys breviceps*. These male specimens agree with the type of *haldemani* in all characters noted by this author. In addition another character to separate the two species that has been overlooked is the lack of a tuft of hair on the middle and posterior trochanters of *haldemani*. The short spur of the female's middle tibia in *haldemani* is about half as long as the long spur while in female *magnificens* this spur is two-thirds as long as the longer spur.

Aphodius granarius Linnaeus

1758. *Scarabaeus granarius* Linnaeus, Systema Naturae, ed. 10, Holmiae I, p. 457.
1887. *Aphodius inutilis* Horn, Tran. Amer. Ent. Soc., XIV, p. 50.

An examination of the type of Horn's *inutilis* reveals it to be a small, light colored example of *Aphodius granarius*. The su-

tural elytral interval is as wide as the second interval which is one of the striking characters of Linnaeus's species. Dr. Horn placed *inutilis* in the group of *Aphodius* with long uneven spinules on the apex of the hind tibia while *granarius* he placed with the group having short, even spinules. The length of the spinules is a very confusing character and *granarius* is another species that might be placed in either group. The spinules on the specimens of *granarius* now before me vary so that some specimens could be referred to the group with long uneven spinules while others, probably due to wear, would be placed in the group with short equal spinules.

A New Species of Mayfly from Tennessee

By Lewis Berner, Department of Biology, University of Florida

While operating insect light traps on the campus of Tusculum College, Dr. Mike Wright collected males of a species of mayfly which he sent to me for identification. These specimens proved to be the new species described below. Subsequent collecting by Dr. Wright at another locality yielded additional males and a few females. Nymphs collected from a creek at Tusculum College were also sent for identification. Since at least two species were included in the nymphal series, it is not possible to assign a nymph to the adults with certainty; therefore, the description of the immature form is not presented in this paper.

Isonychia tusculanensis n. sp.

Adult males of *Isonychia tusculanensis* may be distinguished from those of other species by the brown coloration of the distal third of the mesothoracic wings. This new species appears to be most closely related to *Isonychia matilda* Traver from which it can be separated by the very strong coloration of the apical portion of its fore wings and its larger size. Traver states in her description of *I. matilda,*[1] "The apical third of the fore

[1] Traver, J. R. 1934. New North American species of mayflies (Ephemerida). Jour. Elisha Mitchell Sci. Soc. 50 (1 and 2): 248.

wing faintly tinged with brown, most noticeably on the outer margin." In *I. tusculanensis,* the coloration is very uniform and deep with a particularly heavy concentration in the stigmatic area (fig. 1).

Male imago: Body length 14.5 mm.; length of mesothoracic wings 13.4 mm.; length of caudal filaments 32 mm.

HEAD: Deep reddish-brown dorsally; rings at base of ocelli almost black. Large blackish-brown spot between antennal base and compound eye, and another ventral to antennal base. Basal segments and proximal half of flagellum of antenna reddish-brown; outer half of flagellum pale. Compound eyes almost contiguous dorsally; gray in color.

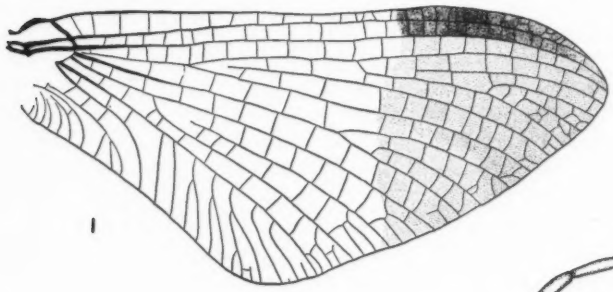
THORAX: Blackish-brown in color. No distinctive markings. Mesothoracic wings hyaline; distal third brown, clearly demarked from colorless basal two-thirds; stigmatic area somewhat darker brown. Venation light brown; stigmatic cross veins numerous, tending to anastomose (fig. 1). Metathoracic wings hyaline, colorless. Legs: Fore femur and tibia very dark black-brown; tarsal segments considerably lighter in color; tarsus slightly longer than tibia. Middle and hind legs yellowish-white; tarsal segments tinged with brown distally, with brown becoming more extensive on fifth tarsal segment; claws brown.

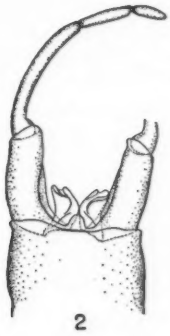
ABDOMEN: Mostly deep red-brown dorsally and ventrally. Segments 2–6 with a narrow translucent band girdling each segment anteriorly producing an annulate appearance. Dorsally, each segment with a narrow black band at posterior border. Segment 1 blackish-brown dorsally and ventrally. Tergites 7–9 slightly paler in mid-dorsal region and sternites 7 and 8 slightly paler than more anterior sternites. Sternite 9 rather pale due to chalky area in median portion of segment. Genitalia blackish-brown; forceps base deeply excavated apically with a tubercle at the base of the excavation; penes of the *albomanicata* type (fig. 2). Caudal filaments blackish-brown, paler apically; segments lighter in color at the joints.

Female imago: Body length 15.7 mm.; length of mesothoracic wings 16 mm.; length of caudal filaments 27 mm.

HEAD: Pale brown except for median stripe of reddish-brown. Postero-lateral angles of occiput black-brown; a pair of blackish-

brown, submedian spots just anterior to occipital margin. Vertex with a narrow line of black-brown at lateral margins; band continues forward in front of compound eye expanding to form a wide bar between antennal base and compound eye. Antennae as in male.





ISONYCHIA TUSCULANENSIS n. sp.

Fig. 1. Fore wing of male.
Fig. 2. Male genitalia.
Fig. 3. Subanal plate of female.

THORAX: Pro- and mesonotum brown, except postscutellum which is fuscous. Metanotum fuscous. Thoracic sternites fuscous. Wings, hyaline, clear without coloration except stigmatic area; latter tinged with brown. Venation similar to that of male. Legs: Femur of fore leg brown in basal fourth, shading into black-brown in outer three-fourths; tibia black-brown; tarsus as in male. Middle and hind legs as in male.

ABDOMEN: Markings and color similar to those of male. Subanal plate deeply excavated (Fig. 3). Caudal filaments as in male.

Holotype: Male imago preserved in alcohol. Greene Co., TENNESSEE, Camp Creek. June 4, 1947. Collected by M. Wright. In collection of Museum of Zoology, University of Michigan. *Allotype:* Female imago preserved in alcohol. Same locality as holotype. June 10, 1947. In collection of Museum of Zoology, University of Michigan. *Paratypes:* 16 males, 6 females (many specimens imperfect). 8 males, 3 females in collection of Museum of Zoology, University of Michigan, other in author's collection. Greene Co., Tenn., Camp Creek. (2 males, 3 females, May 28, 1946; 3 males, June 4, 1947; 7 males, 2 females, June 10, 1947); Greene Co., Tenn. Tusculum College (1 male, April 23, 1946; 1 male, June 24, 1946; 1 male, July 15, 1946).

Announcement

The Academy of Natural Sciences of Philadelphia announces the addition to the honorary membership of the staff of its Department of insects, with the title of Research Associate, of the following entomologists of the Philadelphia areas: Mr. Mark Robinson, President of the American Entomological Society, a coleopterist well known for his systematic studies of the Scarabaeidae; Dr. Rudolf G. Schmieder, Assistant Professor of Zoology at the University of Pennsylvania, past-President of the American Entomological Society, and Editor of "Entomological News," whose experimental work with certain parasitic Hymenoptera is well known; and Dr. Charles Hodge, 4th, Associate Professor of Zoology at Temple University, whose entomological researches have been chiefly along anatomical lines.

Undescribed Species of Crane-Flies from the Western United States and Canada (Dipt.: Tipulidae). Part IX

By Charles P. Alexander, University of Massachusetts, Amherst, Massachusetts

The preceding part under this general title was published in Entomological News 58: 205–209, 1947. The flies described herewith are from Colorado, derived from various sources, as discussed under the individual species.

Prionocera fulvicauda new species

Allied to *proxima;* mesonotal praescutum with four entire brown stripes, the intermediate pair separated by a pale line, only on the cephalic portion this more blackened; male hypopygium with the posterior border of tergite having three pairs of lobes, the lateral pair short, microscopically setulose; submedian lobes directed mesad, pointed at tips; third set of lobes small, provided with coarse setiferous tubercles; inner dististyle with the rostrum relatively stout, with from 10 to 12 blackened peg-like spines on lower margin near base.

♂. Length about 12 mm.; wing 13–14 mm.; antenna about 4 mm.

♀. Length about 17 mm.; wing 15 mm.

Frontal prolongation of head above black, including the nasus; ventral half yellow, becoming even clearer along the oral margin; mouthparts, including palpi, black. Antennae black, the apex of pedicel and base of first flagellar segment a trifle more reddened; proximal four flagellar segments with the lower apical angle slightly produced to give a serrate appearance; succeeding segments less evidently serrate. Head in front with a light silvery gray pruinosity, the pattern ending abruptly on the anterior vertex; dorsal portion of head with the central area of vertex infuscated, more intense medially and in the depressed areas behind the antennal bases; posterior orbits light gray, in cases more broadly so.

Pronotum gray, variegated medially with brown. Mesonotal praescutum gray, with four entire brown stripes, the intermediate pair separated by a short blackish line on the cephalic portion; on the posterior half or more the median vitta brownish gray, paler than the stripes; posterior sclerites of notum gray pruinose, scutal lobes vaguely patterned with brown; parascutella, posterior lateral portions of scutal lobes and the katapleurotergite yellow, remainder of pleurotergite and the pleura light gray; dorsopleural membrane buffy yellow. Halteres with stem obscure yellow, knob infuscated. Legs with the coxae light gray pruinose, paling to yellow at tips; trochanters yellow; femora obscure yellow, the tips narrowly but conspicuously brownish black or black, less clearly delimited on the fore legs; tibiae light brown, the tips darker; tarsi passing into black; claws (male) toothed. Wings with a weak brownish tinge, the costal border, and especially cell *Sc*, more yellowed; stigma medium brown; obliterative streak before cord relatively conspicuous, extending from before the stigma almost to the posterior margin in cell M_3; veins dark brown, more brownish yellow in the brightened fields. Venation: *Rs* relatively long, nearly four times *m-cu;* basal section of vein M_4 elongate, perpendicular.

Abdominal tergites dark gray, with a broad dark brown median stripe, interrupted by the very narrow yellow posterior borders of the segments; lateral tergal borders much more broadly yellow; sternites dark gray, the posterior margins of the outer segments more broadly yellow; hypopygium chiefly fulvous, including the styli, outer tergal lobes and much of the sternite. Ovipositor with the elongate cerci slightly decurved. Male hypopygium with the ninth tergite transversely rectangular, the posterior margin generally truncate but conspicuously lobed; lateral lobes small, obtuse at tips, densely microscopically setulose; submedian lobes much longer, narrowed to acute points, on slide mounts directed mesad, enclosing a broadly transverse median notch; immediately behind these lobes a slightly smaller pair of darkened lobes, more obtuse at tips, similarly directed mesad, their surface with coarse setiferous tu-

bercles. Outer dististyle broadly expanded on proximal half or more, thence narrowed to the obtuse tip, the style broader in some specimens than in others. Inner dististyle with the rostrum elongate, a little expanded on outer portion; lower margin at the constricted part with about 10 to 12 small blackened peglike spines, just basad of this point with a small pale blade.

Habitat.—COLORADO. *Holotype:* ♂, Dream Lake, Rocky Mountain National Park, altitude 10,000 feet, July 18, 1941 (C. P. Alexander); not uncommon in a swale at outlet of lake. *Allotopotype:* ♀, pinned with type. *Paratopotypes:* 4♂♂.

The two species that require comparison are *Prionocera proxima* Lackschewitz and *P. unimicra* Alexander. The former occurs from northern and central Germany eastward to northern Korea, Amurland and Kamtchatka. It agrees with the present fly in the presence of blackened peglike spines on the inner dististyle, differing in all details of lobing of the ninth tergite, the more slender prolongation of the inner dististyle and in various colorational details. The Nearctic *unimicra* differs in the coloration of the head, antennae and other parts of the body, and in the structure of the male hypopygium. I am indebted to Dr. Henry K. Townes for a figure of the type of this species, showing the dorsal aspect of the ninth tergite. While the conformation of the lobes is somewhat the same, especially the lateral and submedian pairs, the third pair is much larger and directed caudad so as to appear on the profile of the posterior border.

Tipula (Trichotipula) mulaiki new species

Allied to *dorsolineata;* macrotrichia in cells of wing reduced to five or six in outer end of cell R_5; male hypopygium with the lateral lobes of the ninth tergite broad, the retrorse spinous setae not including the tips of the lobes; apex of inner dististyle only slightly produced; aedeagus of unusual length and stoutness, virtually as wide as the inner dististyle.

♂. Length about 12 mm.; wing 12.5 mm.
♀. Length about 14 mm.; wing 13 mm.

Described from alcoholic specimens. Frontal prolongation of head short, obscure yellow; nasus elongate; palpi brownish black. Antennae with basal two segments yellow; basal flagellar segments black, the remainder broken. Head above testaceous, the posterior vertex on either side with a major brownish spot.

Thorax chiefly brown, the dorsum with a conspicuous pale central stripe that extends the entire length of the mesonotum, a little narrowed on the scutum and mediotergite. Pleura obscure yellow, more or less variegated with brown. Halteres with stem pale, base of knob darker. Legs with the coxae brown; trochanters obscure yellow; femora yellow, the tips rather narrowly but conspicuously brownish black; tibiae obscure yellow, the tips even more narrowly darkened; tarsi obscure yellow basally, passing into black. Wings with a weak brownish tinge; stigma dark brown, conspicuous; cells *Sc* and Cu_1 paler brown but darker than the ground; a conspicuous whitish obliterative band across cell *1st* M_2, connecting with two narrow longitudinal streaks in cells *R* and *M* on either side of vein *M*, continued into cell M_3 almost to the outer margin, divided into two branches in the latter cell; similar double pale streaks in cells R_3, R_5, M_1, *2nd* M_2, M_4 and *1st A;* antestigmal and poststigmal brightenings present, the latter less distinct; veins brown. Five or six macrotrichia in outer end of cell R_5, lacking in the other cells; no stigmal trichia; no trichia on squama. Venation: Sc_1 preserved, erect; *Rs* shorter than the oblique *m-cu*, the latter connecting with vein M_4 beyond the base.

Abdominal segments brown, conspicuously variegated with paler, the bases of the segments broadly pale yellow, the posterior borders broadly brown, the latter color increasing in amount on the outer segments; in the male the pale color includes most of the mid-dorsum, continuing the pale median thoracic line; sternites more darkened on the sides. Male hypopygium having the caudal margin of the ninth tergite with a broad V-shaped notch, the margin with small blackened setae, those on the lobes stouter and retrorse, not reaching the

apex, as in *dorsolineata*. Inner dististyle nearly parallel-sided, gently narrowed outwardly, the beak only a little produced, slightly upturned; basal lobe large, oval, about one-half as long as the style. Aedeagus of unusual length and stoutness, at its widest point virtually as broad as the inner dististyle; in *dorsolineata* the aedeagus is much narrower, less than one-half as wide as the inner dististyle. The apex of the outer dististyle of the type male is broken and its full size and shape is still unknown.

Habitat.—COLORADO. *Holotype:* alcoholic ♂, Eggers, Poudre Canyon, Larimer Co., August 7, 1941 (S. & D. Mulaik). *Allotopotype:* alcoholic ♀, presumably taken while mating.

I am pleased to name this interesting species for Professor Stanley B. Mulaik, to whom I am indebted for several interesting western Tipulidae. The most similar species is *Tipula* (*Trichotipula*) *dorsolineata* Doane, which differs most evidently in the structure of the male hypopygium, especially the ninth tergite, inner dististyle, and aedeagus.

Tipula (Lunatipula) sagittifera new species

Belongs to the *unicincta* group; general coloration of body light gray, the praescutum with four narrow reddish brown stripes; femora obscure yellow, the tips brownish black, preceded by a more or less distinct clearer yellow ring; wings with a weak brownish tinge, restrictedly patterned with darker brown, including the stigma; obliterative areas before stigma and across the cord conspicuous; abdominal tergites light brown, the fourth tergite conspicuously darker; male hypopygium with the appendage of the ninth sternite a simple depressed cushion; phallosome with two pairs of rods and an additional unpaired median structure, the latter stout, sagittate, the triangular apex subtended on either side by a slender spine; eighth sternite with a single major fasciculate bristle, the inner median group of setae only slightly modified, their tips produced into long filaments.

♂. Length about 17 mm.; wing 18.5 mm.; antenna about 4.1 mm.

Frontal prolongation of head yellow, light gray pruinose at base above; nasus small; palpi brownish black, the incisures restrictedly whitened. Antennae with scape and pedicel yellow, the latter somewhat paler; flagellum brownish black, the segments moderately incised; longest verticils exceeding the segments in length. Head above very light gray, the vertex with a capillary brown median vitta; setae of vertex black and very conspicuous against the ground, rising from slightly darkened punctures.

Pronotum gray, vaguely patterned with darker. Mesonotum light gray; praescutum with four narrow reddish brown stripes, the intermediate pair longer, somewhat constricted to nearly interrupted at near midlength; pseudosutural foveae pale; each scutal lobe with a major reddish area. Pleura and pleurotergite light gray, the ventral sternopleurite slightly darker; dorsopleural membrane yellow. Halteres with stem pale yellow, especially at base; knob infuscated, the apex narrowly whitened. Legs with the coxae light gray; trochanters yellow; femora obscure yellow, the tips brownish black, the amount subequal on all legs, on the fore pair including about the outer tenth, the black tips preceded by a vaguely clearer yellow ring; tibiae brownish yellow, the tips narrowly brownish black; tarsi light brown, the outer segments darker; claws (male) toothed. Wings with a weak brownish tinge; stigma darker brown; small and inconspicuous brown spots at end of vein *Sc* and over the anterior cord; *m-cu* and distal section of vein *Cu* vaguely seamed with brown; obliterative areas before stigma, before cord and across cell *1st* M_2 into base of cell M_3 conspicuous; no post-stigmal brightening; vague pale areas in the centers of cells M_1, *2nd* M_2, M_3 and M_4, near outer end of cell *1st A* adjoining vein *2nd A* and as a more extensive brightening beyond arculus in cells *R* to *1st A;* veins brown. Venation: *Rs* about twice *m-cu;* R_{1+2} entire; cell *1st* M_2 relatively small.

Abdominal tergites light brown, variegated with paler, the fourth tergite conspicuously darker brown, as in this subgroup of species; sternites clearer yellow; hypopygium chiefly brownish yellow. Male hypopygium with the lateral lobes of the ninth

tergite relatively narrow, the subacute tips gently divergent; outer third of lobe without setae, transversely wrinkled. Ninth sternite with its appendage appearing as a large but low and compact cushion, the entire lower face appressed to the sternite; all but the dorsal end of the cushion provided with abundant long yellow setae but with no spinous points. Basistyle immediately above the appendage of the ninth sternite produced into a sclerotized flattened blade, densely provided with microscopic setulae; a lateral flange provided with a short row of long conspicuous setae. Outer dististyle with the blade very broad. Inner dististyle with the beak slender; lower beak an obtusely rounded blackened head; posterior crest of style long-extended, its margin hyaline, microscopically toothed. Phallosome including two pairs of rods and an additional unpaired element; largest paired blades unusually broad, the outer apical angle further produced into a long reddish spine, the inner apical angle obtusely rounded; inner paired blades much smaller; unpaired phallosomic element distinctive, stout, terminating in a triangular head, the lateral region at base of head produced into a slender spine on either side. Eighth sternite with a single major lateral seta, this from a short basal tubercle, completely fasciculate but evidently comprised of several elements; at its base a very much smaller fasciculate seta and two or three additional long normal ones; inner median group of bristles relatively numerous, flattened, their tips extended into long pale filaments; outer median cushion transverse, its outer edge very gently convex.

Habitat.—"Colorado and Montana." *Holotype:* ♂, without further geographical data and the state thus uncertain; July 6, 1926 (H. G. Dyar); United States National Museum. It is unfortunate that the type locality is not more certain.

The most similar described species of the *unicincta* group that have an unpaired median phallosomic element include *Tipula* (*Lunatipula*) *bigeminata* Alexander, *T.* (*L.*) *diacanthophora* Alexander, and *T.* (*L.*) *spatha* Doane. The present fly differs from these in the details of structure of the male hypopygium, including the tergite, appendage of the ninth sternite, phal-

losome, and the eighth sternite. In *diacanthophora,* the very modified inner group of setae of the eighth sternite are entirely different. Dr. Alan Stone has compared the present fly with the holotype specimen of *bigeminata* and indicates that the latter differs in the characters of the tergal lobes and their vestiture, the narrower outer dististyle, and the phallosome, including the longer paired rods, which are elongate and parallel to one another, and in the unpaired median element which is deeply forked.

Two Migrations of the Snout Butterfly, Libytheana bachmanii larvata (Strecker). (Lepidoptera: Libytheidae)

By Osmond P. Breland,[1] The University of Texas

The butterfly discussed in this paper has had the misfortune of having its name changed several times during the past few years. In fact, the family Libytheidae was for a long time considered as a subfamily of the Nymphalidae, although today most workers consider the group to be a separate family.

In older publications, before the species *bachmanii* was divided into subspecies, the species was referred to the genus *Hypatus.* From about 1934 until 1943, *bachmanii* was included in the genus *Libythea* (Michener 1943). In 1938, Field divided *Libythea bachmanii* Kirkland into two subspecies, *L. bachmanii bachmanii* Kirkland, and *L. bachmanii larvata* (Strecker).

Michener (1943) erected the genus *Libytheana* for the American species of *Libythea* which differ markedly from the European forms. The butterfly under discussion is at present recognized as *Libytheana bachmanii larvata* (Strecker). Its general distribution includes the southwestern United States and possibly parts of Mexico (Field 1938; Michener 1943). The general distribution of the other subspecies, *L. bachmanii bachmanii* Kirkland, is the eastern United States.

[1] The writer greatly appreciates the determination of the butterfly by William D. Field.

A recent summary of information relative to the migration of several butterflies, including the present species, is given by Williams (1938). This writer did not distinguish between the subspecies of *bachmanii,* and it may well be that some of his records for migrations east of the Mississippi River were actually *L. b. bachmanii* rather than *L. b. larvata.* Most of Williams' records were from Texas, but also included migrations in Indiana, Illinois, Nebraska and California. Since the paper by Williams was published, Rau (1941) has recorded a migration of this butterfly (referred to as *Libythea bachmanii larvata* (Stkr.) between McAllen and Edinburg, Texas. Williams states that most of his records from Texas show the migrants flying south and southeast, the three exceptions being one to the northeast and two toward the north. He has no records of migrations with a westerly component. The majority of the migrants observed by Rau were flying eastward, with a few stragglers occasionally drifting backward with the wind.

The present migration was first observed at Austin, Texas, August 27, 1947 at 1:30 P.M. The flight continued intermittently until the afternoon of August 31, after which a few individuals were seen for several days. During this period, several observations were made. The butterflies did not come as a continuous stream, but in groups, so that at times a particular area would be entirely free from the insects, and a few minutes later would be filled with fluttering butterflies. The height of the migrating insects was from near the ground up to 30 or 40 feet, with the majority about 15 to 20 feet above the ground. A number of specimens were caught in an insect net, and it was noted that the wings were not noticeably frayed as has been reported for many other migrating butterflies. Most of the insects were in continuous flight, and aside from a few entrapped in buildings, only an occasional individual was observed to alight. Another entomologist, however, reported to the writer that he had seen a crepe myrtle bush almost covered with the butterflies. No mating was seen, although a few pairs were observed flying along together.

The direction of flight was checked with a compass in several places across the migrating front, and found to be west and

northwest. This is, so far as could be determined, the first record of a westward migration for this species in Texas (Williams 1938). At 4:00 P.M. on August 27, the migrating front was approximately 6 miles wide in this area.

On September 14, 1947 at 1:00 P.M. another migration of this same species was first noticed. These butterflies were flying east and southeast, in opposite directions from those in the first migration, and they may have been the same insects returning from the west and northwest.

This second migration differed from the preceding one primarily in that it appeared to be more leisurely. More butterflies were seen to alight, and a few were flying west and northwest in an erratic manner. These apparently leisurely, and at times erratic flights, may have been caused by the rather strong southeast wind against which the insects were flying.

Insect galls were especially attractive to the butterflies, from which they possibly derived some nutrition. Large numbers of the insects were observed clustered about galls, both large and small, of *Disholcaspis* sp. (Cynipidae) on live oak (*Quercus virginiana*). Here the butterflies competed with wasps and other insects that were likewise attracted by the sticky exudate on the outer surfaces of the galls.

This second migration continued for approximately two weeks, with only a few insects flying toward the latter part of the period. The last butterflies were seen September 27.

Summary

1. Two migrations of the snout butterfly, *Libytheana bachmanii larvata* (Strecker) are discussed.

2. In the first flight, the insects were flying west and northwest, while in the second, some two weeks later, the butterflies were flying east and southeast. It is possible that the same insects participated in the two migrations.

3. This observaton is, so far as known, the first record of a western and northwestern migration of this butterfly in Texas. Other directions of flight have included south, southeast, northeast and north.

4. A brief resume is given of recent changes in the nomenclature of this butterfly.

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Roswellia, a New Genus of Ithomines (Lepidoptera)

By RICHARD M. FOX, Carnegie Museum and the University of Pittsburgh

ROSWELLIA new genus

Fore leg of the male with the femur longer than the coxa; the tibia intact, not fused with the tarsus, slightly longer than the femur; tarsus with two joints separated by a non-articulating constriction so placed that the proximal joint is about three times the length the distal joint. Fore leg of the female with the femur longer than the coxa; tibia the same length as the femur; tarsus with five evident joints, a pair of spurs each on the first three joints, the terminal joint armed with pulvillus and a pair of microscopic claws.

Fore wing with R_2 arising at or just beyond the end of the cell; 1d minute to absent; 2d angled, a recurrent vein arising at the apex of the angle; 3d curved and the same length as 2d; cubitus apparently two-branched. Hind wing with the humeral vein strongly forked; 1d present, very short; 2d angled, bearing the recurrent vein; 3d strongly curved, twice the length of 2d; cubitus apparently three-branched; Sc evenly curved, not strongly S-shaped. Males with the hair patch complete, extending along the top of the hind wing cell just below the radius from the base to the end of the cell.

Male genitalia: tegumen and uncus separated by a strong suture; tegumen hood-like, confluent with the vinculum; uncus prolonged to a strong projection terminating in a minute hook; valve suboval, armed at its apex on the inner face with a long fang-like projection which is recurved posteriorad; sacculus forming an irregular bulge without an even dorsal margin; saccus as long as the tegumen plus uncus; juxta narrow, deep, V-shaped; penis slender, a little more than twice the length of the tegumen plus uncus, up-angled at a point one fourth of its length from the posterior tip; foramen of the penis one-third of the length of the penis.

Genotype: Athesis acrisione Hewitson, 1869.

The species included in *Athesis* by Haensch, 1909 (In Seitz), actually belong to three different genera. The genus *Patricia* Fox, 1940, received *dercyllidas, hewitsonii, demylus* and *oligyrtis,* and is not closely related to *Athesis* proper. *Roswellia* is rather closer, but the differences are deep; it comprises only *R. acrisione acrisione* and *R. acrisione deflavata.* These actions delimit *Athesis* to monotypic proportions, to include only the genotype *A. clearista clearista* and *A. clearista bassleri.*

Retaining as it does the two joints of the male fore tarsus, *Roswellia* is one of the most primitive genera of the Ithomiinae, if not the most primitive; this is a character shared with no other genus in the subfamily. *Roswellia* is separated from *Athesis* by the following additional points: the valve of *Athesis* has the sacculus cleanly delimited, forming a distinct in-folding with a curved dorsal margin, while the apex of the valve is armed with a very slender projection pointing anteriorad, not recurved to point posteriorad; the penis of *Athesis* is nearly straight, not up-angled; Sc of the hind wing in *Athesis* is strongly S-shaped, while in *Roswellia* it is nearly straight—otherwise the venation of the two genera is similar.

Perhaps it would have been more appropriate to have reserved the name *Roswellia* for use in the Hesperiidae, but since the present author has no new genus in that family, but does have this one, he siezes the opportunity to dedicate the genus to the late Roswell C. Williams, Jr.

Current Entomological Literature

COMPILED BY RAYMOND Q. BLISS AND THEODORE M. TELSCH.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), included Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the year 1948 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

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HEMIPTERA—Burnett, T.—(See under Anatomy.) **Dollfus and Carayon**—(See under Anatomy.) **Dupuis, C.**—Nouvelles données biologiques and morphologiques sur les Diptères Phasiinae parasites d'Hémiptères Hétèroptères. [Annales de Parasit.] *22*: 201–32, 1947. **Hottes, F. C.**—Two new species of Aphiidae. [63] 61: 33–40.—Descriptions of the sexual forms of some species of Aphiidae. *Ibid.*: 29–32. **Knowlton, G. F.**—Boxelder bugs feeding on honeybees. [18] 43: 17. **Metcalf and Bruner**—Cuban Flatidae with new species from adjacent regions (Homo.). [5] 41: 63–118 (k). **Newcomer, W. S.**—(See under Anatomy.) **Wigglesworth, V. B.**—(See under Anatomy.) **Wilson, Kelsheimer, Griffiths and Tissot**—Preliminary report on the control of green peach aphid on shade grown tobacco in Florida. [31] 30: 45–56.

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